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FLORENCE YAPLE.

Miss Florence Yaple, who was closely identified with the work of this JOURNAL for nearly twenty years, died at her home in Philadelphia on Wednesday evening, October 9th, after a long illness.

Miss Yaple came from a stock which had been well known in Ross County, Ohio, since 1812, the family having settled in America some half century earlier. Her parents were well educated and both were fond of nature; her mother it is said knew nearly all the flowers and birds in their vicinity. The Yaples lived on a farm in Hallsville, near Chillicothe, where Miss Florence was born on August 24, 1865.

Upon the death of her mother Miss Yaple, then but twelve years of age, took charge of the home and in spite of household duties succeeded in educating herself so well that at the age of sixteen she was able to become a teacher in the district common school.

As a consequence of attending the meetings of the Teachers' Institute in Chillicothe, Miss Yaple felt that she must enlarge her sphere of activity and do something more than teach in the district school, especially as the term was limited to but a few months in the year. She, therefore, attended the summer school at Ada, Ohio, with the view of becoming qualified to do more advanced work. She soon relinquished teaching, however, to take up the study of pharmacy. The nearest college of pharmacy was in Cincinnati; she matriculated there in 1888–1889, taking one course of lectures, and on August 14, 1889, passed the examinations of the Ohio State Board of Pharmacy and became registered as an assistant pharmacist.

Miss Yaple probably would have had difficulty in obtaining in a

Cincinnati drug store the experience required to obtain a manager's certificate. It so happened that while holding the position of secretary of the Equal Rights Society of Chillicothe she was sent as a delegate to the State Convention which met during the summer of 1890 at Massilon, Ohio. This was a most fortunate occurrence for her and proved to be the turning point in her life, for while attending this convention she learned that Dr. Suzan Hayhurst of the Woman's Medical College Hospital in Philadelphia would probably give her an opportunity for securing the experience she desired in compounding prescriptions, which would enable her to obtain the coveted manager's certificate and conduct a pharmacy. Miss Yaple succeeded in being appointed assistant to Dr. Hayhurst in the Woman's Medical College Hospital and served from May 4, 1891, to April 1, 1893. After this she held a position in the drug store of Dr. David F. Swisher, in Darby, until December 1, 1894, when it became necessary for her to devote her entire time to her work as Business Manager of the AMERICAN JOURNAL OF PHARMACY, a position to which she had been appointed by Prof. Henry Trimble in October of the same year.

Miss Yaple proved to be especially fitted for journalism and Professor Trimble deserves great credit for his selection. In addition to her services on the JOURNAL Miss Yaple also acted as research assistant to Professor Trimble.

While at the Woman's Medical College Hospital Miss Yaple matriculated in the Philadelphia College of Pharmacy, completing the regular course in 1895 and receiving the degree of Ph.G. Her graduating thesis, entitled "Some Commercial Cocoas," was published in this JOURNAL for June, 1895. It is a valuable piece of work and her results have been frequently cited by writers on organic analysis.

When I became editor of this JOURNAL Miss Yaple continued as Business Manager and soon was virtually Associate Editor as well as my research assistant. In both capacities she proved invaluable. All of her work was characterized by a high degree of thoroughness. This was evidenced in every department of the JOURNAL from the reading of proof and the preparation of the annual indexes, up to the handling of the JOURNAL'S finances.

She became a life member of the College in 1903 and was made a member of the Publication Committee at the annual meeting on March 26, 1906. While not a member of the Committee on Phar-

maceutical Meetings, for more than fifteen years she acted as the secretary of these meetings and prepared the minutes for publication. These minutes may be considered as models of their kind; they were very carefully prepared and no pains were spared by her in verifying the citations and statements made in the course of the discussions. Miss Yaple was for a number of years a member of the Executive Board of the Alumni Association of the Philadelphia College of Pharmacy; for several years she also served as chairman of the Memorial Committee of this association and prepared appropriate biographical sketches for the *Alumni Report.* In 1901 when I was requested by Dr. Charles Rice, Chairman of the Committee of Revision of the U. S. Pharmacopœia, to take charge of the preparation of Part 3 of the "Digest of Criticisms on the U. S. Pharmacopœia VII," this work was prepared by Miss Yaple under my supervision as stated in the Letter of Transmittal in the published volume.

Miss Yaple was naturally a student and in her spare time attended special lectures and took courses of instruction in other institutions, continually striving to add to her fund of knowledge. She was a reader of the best works in philosophy, science, and literature. She took pleasure in wood-carving, in which she was quite proficient, although since coming to Philadelphia the demands upon her time allowed very little opportunity for the practice of this art.

Always modest and retiring Miss Yaple was well satisfied with a knowledge that her efforts were appreciated. She was always willing to help students and members of the College when they came to the JOURNAL rooms to seek for information. Furthermore, her work for others was always done in as careful a manner as though it were done for herself. By reason of her familiarity with the traditions of the College and her loyalty to its work her influence stimulated and benefited those around her. The reputation of an institution is founded on just such conscientious service as Miss Yaple rendered the Philadelphia College of Pharmacy; her example is well worthy of emulation.

HENRY KRAEMER.

THE THALLEIOQUIN TEST.

By Charles H. LaWall.

The thalleioquin reaction, from Thallos (green twig) and quinia, is one which has been in use for many years for distinguishing certain of the cinchona alkaloids. It was discovered in 1835,[1] accidentally by J. J. Andre, Professor of the Military Hospital of Instruction at Metz, who endeavored to ascertain the composition and character of quinine, and believing it to be a resinate of ammonia applied various reagents to it with a view of proving his contention. The application of chlorine water to a solution of quinine sulphate, followed by ammonia water, led to the production of the beautiful green color which is so characteristic of this reaction and its subsequent description in the memoir presented by the author to the Society of Pharmacists in Paris.

In 1840,[2] Brande, who is erroneously credited in the latest edition (4th) of Allen's Commercial Organic Analysis with being the author of the test, made some subsequent observations and placed the test upon a more satisfactory basis and it was adopted as one of the distinguishing tests for quinine in the 1840 United States Pharmacopœia, and has been continued in every subsequent edition of that work.

In 1877,[3] Henry Trimble proposed the use of the test for the quantitative determination of small amounts of quinine and in 1880,[4] Frederick Zeller reviewed the test and discovered that bromine water was a more sensitive reagent than chlorine water. Other investigators in the meantime had ascertained that quinine was not the only cinchona alkaloid which gives this reaction but that it was produced by quinidine, cupreine, hydroquinine, hydroquinidine and diquinicine, and also that variations of color can be produced by the addition of other reagents like potassium ferrocyanide, which produces a bright crimson color.

In 1894,[5] Prof. Theodore G. Wormley published a comprehensive research upon the comparative value of several of the known tests

[1] Amer. Jour. Pharm. 1837, p. 208.
[2] Amer. Jour. Pharm. 1840, p. 36.
[3] Amer. Jour. Pharm. 1877, p. 151.
[4] Amer. Jour. Pharm. 1880, p. 385.
[5] Amer. Jour. Pharm. 1894, p. 563.

for the recognition of quinine in which he arrived at the conclusion that the thalleioquin test could be used for the detection of 0.00025 gm. in 5 c.c. of solution or 1 in 20,000, while the herapathite test which results in the production of the characteristic crystals of quinine iodosulphate is only sensitive in solutions of 1–1000 and then with great difficulty.

Professor Wormley observed that the fluorescence of solutions of quinine which have been acidulated with sulphuric acid is one of the most characteristic of its properties and may be observed in a 1–100,000 solution when examined under favorable lighting conditions. The bitter taste, also, he observed is detectable in solutions of 1–20,000.

The thalleioquin reaction as originally described in the 1840 U. S. P. is as follows:

"The aqueous solution upon the addition first of chlorine and afterward of ammonia, assumes a green color."

This description was not essentially altered until the 1890 U. S. P., when it was changed to read as follows:

"On treating 10 c.c. of an aqueous acidulated solution (about 1 in 1500) of quinine with 2 drops of bromine water and then with an excess of ammonia water, the liquid will acquire an emerald green color."

Practically all of the later observers had reported great variation in the intensity of the color produced in quinine solutions of the same strength when subjected to varying conditions of acidulation, proportion of chlorine or bromine water, etc., thus making it valueless as a quantitative method.

The reaction forming a striking lecture table experiment when performed upon a large scale, it was adopted by Professor Joseph P. Remington a number of years ago in teaching at the Philadelphia College of Pharmacy, to illustrate the lecture upon the cinchona alkaloids. It was observed by him and afterward reported in Zeller's paper, that when a small amount of ammonia water, insufficient to produce the green color, is added, a beautiful rose color is developed. This is more easily produced when working with large quantities than when experimenting in test tubes, and the following proportions have been found to be satisfactory for lecture table demonstration to illustrate the green and rose colors respectively:

	Green	Rose
Solution of Quinine Sulphate 1–10,000, 4 litres	Chlorine water 500 c.c.	Chlorine water 500 c.c.
	Ammonia water 30 c.c.	Ammonia water 3 c.c.

At the time of the adoption of the U. S. P. VIII, the former chlorine water was replaced by Liquor Chlori Compositus, a preparation made by acting upon potassium chlorate with hydrochloric acid and then diluting with water. This solution resembles chlorine water in containing about 0.4 per cent. of free chlorine, but differs from it in containing some free hydrochloric acid and also some oxyacids of chlorine as well as some salts of potassium.

The first attempt to produce the lecture table test using the compound solution of chlorine resulted in failure and subsequent experiments showed that no reaction or at most a faint and fugitive color could be obtained with the extemporaneously prepared chlorine water.

I did not have time to investigate the matter then and left it rest for several years, going back to the regular chlorine water for the test. In 1908 it was suggested to Ralph Nelden, then a senior student at the Philadelphia College of Pharmacy, to take up the subject for his graduating thesis and ascertain the cause of the failure to obtain the reaction when the compound solution of chlorine was used. Mr. Nelden's experiments (suggested and outlined by me) were comprehensive and satisfactory, leading to the undoubted conclusion (by a process of elimination) that neither potassium chlorate, potassium chloride nor hydrochloric acid interfered with the test but that the presence of the oxyacids was responsible for the failure of the test.

Nelden also experimented with the oxysalts of bromine and strange to say found that the analogous bromine preparation made by the action of hydrobromic acid upon potassium bromate, produced a reagent which was even more sensitive than the bromine water alone, and Nelden reported successful results of the test using this new reagent in dilutions of quinine 1 in 35,000.

As I have been frequently called upon to test for the presence of quinine in proprietary medicines, bitters, etc., when the proportion is often very minute and when other and possibly interfering alkaloids may be present, Nelden's results interested me to the extent that I duplicated his entire work, verifying all of his con-

clusions and making some additional observations and experiments.

I observed that when the reaction was tried upon solutions in which the amount of alkaloid was unknown the experiment had to be repeated, using varying quantities of bromine water until the proportion best suited for the particular dilution was ascertained. I found also that by still further diluting Nelden's reagent the results were much more satisfactory. The reagent, which should not be more than several weeks old, is prepared by me as follows:

Potassium bromate	0.5	gm.
Hydrobromic acid diluted (10 per cent.)	10	c.c.
Water, q.s.	100	c.c.

Dissolve the potassium bromate in the diluted hydrobromic acid and when the solution is complete add the water.

I also discovered the fact that more dilute solutions, in large volumes (50 to 100 c.c.) gave better results than smaller quantities and there is no difficulty whatever in getting a reaction in a solution of quinine sulphate as dilute as 1 in 100,000, or even 1 in 200,000, where the following procedure is followed:

Take 100 c.c. of the solution in a Nessler tube or a tall cylindrical bottle, add 5 to 10 drops of the reagent mentioned above, agitate well and immediately add 10 drops of stronger ammonia water and again agitate. In a dilution of 1 in 10,000, viewed in a column 5 c.m. deep, the tint is that of No. 376 *vert bleu* (Code des Couleurs, Klinksieck et Valette), while in a 1 in 50,000 solution viewed in the same manner, the tint is 336 *vert,* and in a 1 in 100,000 solution, similarly observed the tint is 303 c. *vert.*

I then made experiments to ascertain the best method of applying the reaction to unknown solutions and proceeding on the basis of a drug or a fluidextract (concentrating more dilute preparations accordingly) the procedure is as follows:

To 1 c.c. of the liquid or 1 gm. of the solid add 20 c.c. of ether in a large stoppered test tube. Make alkaline with ammonia water and shake well. After separation pour off the ethereal solution as completely as possible into a watch glass and allow it to evaporate. Take up the residue with 1 c.c. of tenth normal sulphuric acid, dilute with water to 15 c.c., transfer 5 c.c. to a tall cylindrical bottle and dilute to 100 c.c., add 5 drops of the bromine reagent described above, agitate well, add 10 drops of ammonia water,

agitate again. Compare the color with a specimen of plain water made up to the same volume. If the first test is negative, make another, using 10 c.c. of the acid solution of the alkaloid, diluted to 100 c.c. as before. If no green color is produced in either of these tests, cinchona alkaloids are absent or present in an amount less than .0001 gm. which is the amount capable of detection by this method of procedure. Sometimes it will be found necessary to purify the alkaloid by a second shaking out with ether.

Check tests were made, using mixtures of cinchona and the following drugs: Aconite, belladonna, colchicum, conium, gelsemium, guarana, hydrastis, hyoscyamus, ipecac, nux vomica, opium, physostigma and phodophyllum and none of them were found to inhibit the reaction at all.

A STUDY OF AMERICAN GROWN CANNABIS IN COMPARISON WITH SAMPLES FROM VARIOUS OTHER SOURCES.*

By C. R. Eckler and F. A. Miller.

Several factors have recently given rise to considerable comment on the subject of American Cannabis. Of these, perhaps the most important are: the increased cost of the Indian drug, resulting in the search for a cheaper product; the none too well supported claims made by some investigators, leading, we believe, to a false conception of the activity of commercial lots of drug; the question as to whether or not an active variety can be successfully cultivated in this country on a commercial scale; and the question of the feasibility of including the American variety in the coming revision of the United States Pharmacopœia. The influence upon the activity of the drug of such factors as soil, climate, geographical location, time of harvesting, method of curing, and parts of plant included, are also of interest.

Famulener and Lyons [1] claim that the character of the soil and the geographical area where grown, primarily influence the activity of the plant. Holmes [2] reported on French, African and Indian

*Reprinted from original communications, Eighth International Congress of Applied Chemistry, Vol. xvii, p. 23.

[1] Famulener and Lyons: Proc. Am. Pharm. Assoc., 1903, 51, 240.

[2] Holmes: Pharm. Jr., 1905, 74, 550.

Cannabis in 1905 to the effect that although the French and African varieties indicated some activity, they were not nearly so active as the Indian drug and could not be recommended for manufacturing purposes. He reported the African as being a little more active than the French. Houghton and Hamilton,[3] in 1908, named seven different sources from which they had tested samples, three being within the United States. In their conclusions they claim that Cannabis sativa, when grown in various localities of the United States, is found to be fully as active as the best imported Indian grown Cannabis. True and Klugh [4] grew plants from foreign seed and commercial drug, at Washington and southern Texas. They reported that the home grown drug was found to be fully equal in efficiency to the imported article. Hamilton [5] called attention to the fact that "various investigators," whom he failed to name, have examined American hemp and obtained results which indicated that the influence of soil and climate does not affect the quality of the extract.

Our interest in the different phases of the Cannabis situation has led us to report our experience with various commercial samples of the drug, and to state in brief the results of our work on the experimental cultivation of the American and Indian varieties. Materials for these investigations were obtained by growing plots, experimentally, both from the foreign and native seed. The following tests were carried out on various samples collected from these plots.

CULTIVATED CANNABIS.

Where grown.	No. of sample.	Percentage activity compared with good Indian grown samples.
Plot A	B-176	Approximately 40 per cent.
Plot A	1494	Approximately 50 per cent.
Plot B	B-596	Approximately 60 per cent.
Plot C	B-770	Not more than 50 per cent.
Plot C	B-771	Not more than 50 per cent.
	B-703	Approximately 65 per cent.
Plot D	B-177	Approximately 40 per cent.
Plot E	1493	Approximately 40 per cent.
	B-437	Approximately 50 per cent.
	B-693	Not more than 50 per cent.

[3] Houghton and Hamilton: AM. JR. PHARM., 1908, 80, 21.
[4] True and Klugh: Proc. Am. Pharm. Assoc., 1909, 57, 843.
[5] Hamilton: Jr. Am. Pharm. Assoc., 1912, 1, 201.

The samples, on which the foregoing assays were made, were obtained under the following conditions: Seeds from an active commercial lot of Indian Cannabis were taken for experimental planting. A good stand of plants was easily obtained from these seeds. The plants were grown under ordinary agricultural conditions, upon a soil consisting of rather poor clay loam. The plants as observed on a plot (*A*) thirty by sixty feet, exhibited a wide range of variations. These variations were indicated by such botanical characteristics as size, color, and form, as found in leaf, plant, and inflorescence, date of flowering and time of maturity. Twelve plants from this plot (*A*) were of dwarf habit, from one to two feet high, and free from branches. These plants flowered early. They produced pistillate flower clusters which were heavy, compact, and leafless, averaging from two to four inches in length. They bore much resin and possessed the characteristic odor of Indian Cannabis. The three earliest flowering of these were selected for seed plants. August 17, 1909, the pistillate inflorescence of the twelve dwarfs was collected for testing. The sample was cured at room temperature and designated by No. B–176. The remainder of the plants in plot *A* were from three to seven feet high, much branched, and produced small inconspicuous flower clusters which were late in appearing. They showed but few resin bearing glands and did not possess the odor of foreign Cannabis to such a marked degree as noticed in the dwarf plants. August 24, 1909, the pistillate tops, including several inches of leafy stem, were collected for testing. The sample thus obtained was dried at room temperature, and designated by No. 1494.

The seeds selected from the three early flowering dwarfs were planted the following year on plot B. The plants obtained were a great improvement over the parents of the previous year. They averaged from two to five feet in height and were more branched. The inflorescence was long (averaging over twelve inches), dense, heavy, and carried much resin. Individual flower clusters were observed, measuring fourteen inches in length and bearing no leaves except the small bracts subtending the flower clusters. September 7, 1910, a collection was made from twelve of the best plants. The sample thus obtained was cured at room temperature, and tested under No. B–596.

At the same time, seed plants were selected. These selections were made for the purpose of continuing and improving the strain,

as follows: first, from one plant bearing the largest inflorescence, which in this instance measured fourteen inches in length; second, from one plant showing a deep purple color in all parts; and third, from twelve of the best remaining plants, the size of the inflorescence serving as a basis for the selection. The following year the seeds from these selections were planted on plot C. The resulting crop consisted of uniform plants, very much like the parents in most cases. One marked exception was the appearance of the purple color in many plants from each of the other selections. It predominated, however, in the second selection. The first selection resulted in low, almost unbranched individuals. The pistillate flowering tops averaged ten inches in length, and produced more leaves than the parent form. A collection was made from these plants, for testing, on October 13, 1911. This sample was taken from the twelve best plants and tested under No. B–770. The second selection gave rise to individuals, all but a small proportion of which possessed the purple characteristic to a marked degree. The pistillate tops averaged one foot in length but were of a more interrupted nature and not so dense as noted in the parent plants. A collection was made from these plants October 13, 1911, and designated by No. B–771. No collection was made from the third selection. From sample B–770 three individual plant selections have again been made; first from one plant four feet high, and unbranched, which produced a large, single leafless inflorescence; second, from one plant three feet high, unbranched, which produced a large, single leafy inflorescence; and the third from one plant four feet high, which was divided near the top into several short branches. All of these produced good flower clusters, with numerous leaves. The strain showing the purple character was discontinued.

Sample B–703 was grown from seeds taken from a commercial lot of Cannabis Indica, No. 1728. These plants were unusual as to size and vigor, but produced an extremely low percentage of flowering tops.

Samples No. B–177 and 1493 were grown from seeds of American hemp, obtained in Lexington, Ky. The location of the plots (D and E) and the conditions of growth were practically the same as those for the foreign seed. The tops of this variety were very poor, being small and bearing a large proportion of leaves. August 17, 1909, a sample was collected which consisted largely of leaves and stems. This was dried at room temperature and tested under

No. B–177. A second sample for testing (1493) was collected, August 24, 1909. The drug was spread thinly in the field for twenty-four hours, during twelve of which it was exposed to direct sunlight. Drying was then completed under shelter. The following year another planting was made from the Kentucky seed under practically the same conditions. The character of the plants was the same as noted for the preceding year. A sample of the leafy tops was tested under No. B–437. No further investigation has been made of this form. The pistillate inflorescence was in all cases very small, leafy, and lacking in resin and the true Cannabis odor.

Sample No. B–693 was obtained from one extremely large and luxuriant plant. This plant was observed in a hardy border, and was tested on account of its extreme size and the very favorable appearance of its inflorescence. The exact source of the seed is not known.

In order to gain some information regarding the activity of commercial lots of American Cannabis a number of samples were purchased from drug brokers and tested physiologically. The method in brief is as follows:

METHOD OF PREPARING DOSES FROM CRUDE DRUGS.

A 20 gramme sample of the drug in No. 60 powder is macerated with official alcohol in a small flask, which is occasionally agitated, for from 48 to 72 hours. The content of the flask is then poured into a narrow percolator. Percolation is allowed to proceed slowly, more alcohol being added as necessary. The first 90 c.c. of percolate are reserved; 100 to 150 c.c. more are then collected, evaporated under an air jet without heat, added to the reserved 90 c.c. and made up to 100 c.c. Doses of this 20 per cent. tincture are calculated, for each dog, per Kgm. of body weight. The quantity is drawn off with a pipette, evaporated without heat to an extract consistency, and made into a pill or put into a capsule.

In order to determine with certainty whether or not the active principles were completely extracted by the foregoing method, on several occasions the drug was returned to the flask and again macerated and percolated. One hundred c.c. of percolate were reduced, made into a pill, and given to a small susceptible dog. In no case were noticeable symptoms produced.

METHOD OF TESTING.

The work is carried out on fox terriers which are kept in well ventilated, comfortable stalls. These stalls are arranged in a row, and so constructed that the dogs cannot see each other, or any object about the room which might disturb or excite them. The assays are made by one person, usually, who endeavors to maintain a thorough acquaintance with the normal movements of each animal. When a preparation is to be tested one, two or three pairs of dogs are selected which have previously been standardized against Cannabis preparations. The animals are fasted for twenty-four hours, and then to one of a pair is given (by mouth in pill or capsule) a dose of a standard preparation, and to the other a dose of the unknown. The animals are observed almost constantly during the period between one and three hours after the administration, and the results noted. After this, the animals are allowed sufficient time for recovery and complete excretion of the drug, usually about three days, and then the drugs are given again, this time in the reverse order. The next time the order is again reversed and so on. The doses are increased or diminished, according to the effects previously produced, until the minimum amount of each preparation necessary to produce slight but distinct inco-ordination of the muscles is determined.

The dose of the unknown required for a given animal is compared with that required of the standard. The results on the several animals are then compared and conclusions drawn.

AMERICAN CANNABIS FROM VARIOUS COMMERCIAL SOURCES.

No. of Sample.	Extractive.	Percentage activity compared with good Indian grown samples.	Commercial Source.
1032		Not more than 20 per cent.	Indianapolis
B-407		Not more than 50 per cent.	St. Louis
B-529		Not more than 40 per cent.	New York
B-824		Not more than 65 per cent.	Indianapolis
B-1034	7.98 per cent.	Not more than 50 per cent.	St. Louis
B-1040	11.08 per cent.	Not more than 50 per cent.	New York
B-1039	11.39 per cent.	Not more than 75 per cent.	New York
B-1047	13.60 per cent.	Not more than 60 per cent.	St. Louis
B-1054	15.47 per cent.	Not more than 75 per cent.	New York

The following conditions were noted in the foregoing samples:

No. B–529 contained thirty per cent. of cut stems. The pro-

portion of pistillate inflorescence was small. The odor was not pronounced or characteristic of Indian Cannabis.

No. B–1034 contained an excess of leaves, stems and seeds. The flowering tops were small.

No. B–1039 contained over fifty per cent. of seeds and stems. The color of the sample was a uniform bright green. No odor of Cannabis was suggested.

No. B–1040 contained only a small proportion of seeds and stems. The drug had been compressed in such a manner as to resemble Indian Cannabis.

No. B–1047 contained a very small proportion of leaves, stems and seeds. The odor was slight and not that of Indian Cannabis.

No. B–1054 consisted of small leaves, leaf fragments, and bracts. No seeds or stems were present.

No. B–824 and No. 1032 were collected from wild plants of Cannabis sativa, and consisted largely of leafy tops. The flower clusters were extremely small, and constituted only a minor portion of the sample.

INFERIOR CANNABIS FROM FOREIGN SOURCES.

That there is much inferior so-called Indian Cannabis on the market is true without doubt. It seems probable that a great deal of this has been grown, not in India, but in other places.

The following table shows the results obtained in testing some of these inferior grades. These samples were received at different times (over a period of two years), and were submitted by drug brokers upon the requests for samples of Indian Cannabis.

No. of Sample.	Marks on package.	Activity compared with good Indian samples.	Commercial Source.
B-275	"Cannabis Indica"	Approximately 70 per cent.	Greece
B-634	"Indian Cannabis, Green Tops"	Approximately 60 per cent.	Germany
B-644	"Cannabis Herb, Madagascar"	Approximately 50 per cent.	Germany
B-660	"Cannabis Indica Herb"	Approximately 40 per cent.	Greece
B-815	"Levant"	Approximately 50 per cent.	New York
B-812	"East Indian Guaza"	Approximately 90 per cent.	London

COMMERCIAL FLUID EXTRACTS OF AMERICAN CANNABIS.

Since the crude American Cannabis upon the market proved to be generally low and variable in activity, it was of interest to know

whether or not commercial fluid extracts would show these same qualities. Several samples were purchased in the market and the results of these tests may be seen in the following table:

No. of Sample.	Amount of extractive.	Activity compared with same makers' fluid extracts from Indian grown drug.
P-307	7.40 per cent.	Approximately 90 per cent.
P-308	9.86 per cent.	Approximately 100 per cent.
P-309	6.16 per cent.	Not more than 75 per cent.
P-310	6.37 per cent.	Not more than 50 per cent.
P-311 (African)	15.50 per cent.	Between 90 per cent.-100 per cent.

SUMMARY.

Soil, climate and geographical location have a decided influence upon the activity of American and Indian Cannabis.

Repeated plantings from carefully selected seeds of American and Indian Cannabis have failed to yield a product testing over 65 per cent. as active as good Indian grown drug, while the majority of the plantings tested 50 per cent. and less.

Commercial samples of American Cannabis were found to vary widely in their activity. Of the samples tested none were as active as good samples of the Indian drug, and a number were not more than 50 per cent. as active.

Commercial samples from various foreign sources were supplied upon requests for samples of Cannabis Indica. None of these were equal to the Indian drug and some tested extremely low.

Commercial samples of fluid extracts of American Cannabis vary widely in their activity, some being not more than 50 per cent. as active as Indian fluid extracts from the same makers.

In addition to physical and botanical characteristics, the physiological assay is of greatest importance in judging the quality of the drug. Very little dependence can be placed on the estimation of the extractive matter yielded to alcohol.

The results of this work indicate that if American Cannabis is made official, difficulty will generally be experienced in obtaining highly active lots which will compare favorably with good Indian drug.

From the DEPARTMENT OF BOTANY AND EXPERIMENTAL MEDICINE.

ELI LILLY & COMPANY.

COMMERCIAL CINNAMON AND CASSIA.*

By Harry E. Sindall.

The varieties of cinnamon and cassia on the market are rather numerous, and differ from each other considerably in flavor, strength, ash, volatile oil, alcohol extract, etc. Considering these differences it seems of interest to tabulate the composition of some of the more important varieties as shown by average samples of large lots ground in the commercial way. Among the commonest used are broken China, Ceylon chips, broken Batavia, Saigon and Seychelle cassia. In addition, some data are given on some cinnamons and cassias not so well known. Broken China is Cassia cinnamon,[1] sometimes known as China cassia or Canton cassia, and is cultivated in the southeastern provinces of the Chinese Empire and exported by the way of Calcutta. It occurs in quills usually shorter than those of Saigon. The bark is aromatic, and somewhat astringent. It is imported in large rattan bales, and used extensively in commerce. Ceylon cinnamon is collected from *Cinnamomum zeylaniuum,*[1] indigenous to and cultivated in the island of Ceylon. It comes in closely rolled double quills, composed of numerous thin layers of the inner bark of the shoots. The odor is delicately aromatic, and very distinct from either Cassia or Saigon bark. Ceylon chips consist of the small refuse of the whole bark, and apparently the great amount of dirt present is due to the fact that these pieces are collected off the ground for shipment. Ceylon chips are imported in large and heavy bales packed by a press. Its use in commerce is very limited on account of its dirty condition. Ceylon cinnamon contains from 0.5 to 1 per cent. volatile oil. Batavia cassia is the bark of *Cinnamomum Burmanni.*[1] It occurs in double quills, the larger sometimes enclosing the smaller quills, 5–8 cm. long, outer surface light or reddish brown, nearly smooth, inner surface dark brown with occasional depressed areas, odor and taste aromatic and distinctly mucilaginous. Broken Batavia consists of quills broken in small pieces, and is imported very clean in ordinary bagging and

* Reprinted from the Journal of Industrial and Engineering Chemistry, Vol. 4. No. 8. August, 1912.

[1] Kraemer's "Botany and Pharmacognosy," 2nd Ed., pp. 513-16.

used extensively in commerce. Saigon cassia is obtained from *Cinnamomum Loureirii*,[2] and is cultivated in Cochin China, and parts of China, and exported from Saigon in bundles about 30–40 cm. long, 20 cm. wide, and 10 cm. thick, weighing about 1.5–2 kg., and consisting of pieces varying in size and color from small brownish black single quills to large thick grayish-brown transversely curved pieces. The odor is aromatic, taste mucilaginous, aromatic and pungent. It is used very extensively in commerce, is imported in wooden boxes covered with rattan, and is usually clean. Seychelle cassia comes from the islands of that name in the Indian Ocean. It is a very thick bark, mild in flavor and odor, and exceedingly clean. It is imported in ordinary bagging.

Table I gives the average, maximum, and minimum of total ash and acid insoluble ash, by years, of samples from large lots. The A. O. A. C. methods of analysis were used.

TABLE I.—PERCENTAGES.

		Total ash.			Ash insoluble in HCl.		
Variety	Samples	Max.	Min.	Av.	Max.	Min.	Av.
Year 1908.							
Broken China	(24)	7.47	3.12	4.79	4.17	0.69	2.02
Ceylon chips	(4)	7.60	7.38	7.47	3.80	3.02	3.59
Broken Batavia	(5)	5.00	4.31	4.68	1.71	1.13	1.40
Saigon	(9)	4.52	3.63	4.25	1.52	0.58	1.09
Seychelle	(4)	5.91	3.63	4.70	1.70	0.05	0.90
Year 1909.							
Broken China	(15)	4.26	3.37	3.77	1.53	0.94	1.20
Ceylon chips	(4)	13.41	7.83	10.49	8.16	3.25	5.57
Broken Batavia	(2)	3.96	3.63	3.79	0.19	0.16	0.18
Saigon	(2)	4.36	4.22	4.28	1.71	0.78	1.24
Seychelle	(6)	4.90	3.42	4.40	0.27	0.03	0.11
Year 1910.							
Broken China	(2)	3.97	3.71	3.84	1.27	1.24	1.25
Ceylon chips	(4)	8.39	5.88	7.15	4.18	0.51	2.32
Broken Batavia	(4)	3.90	3.57	3.78	0.34	0.25	0.29
Year 1911.							
Broken China	(14)	3.72	2.78	3.27	1.00	0.50	0.76
Broken Batavia	(7)	5.04	3.57	4.32	0.86	0.21	0.48
Saigon	(6)	4.80	3.71	4.21	0.79	0.43	0.66
Seychelle	(4)	4.80	3.57	4.10	0.61	0.28	0.38

[2] Kraemer's "Botany and Pharmacognosy," 2nd Ed., pp. 513-16.

As the table shows, prior to 1909, the quality of broken China imported made it a difficult problem for the spice grinders to conform with the maximum total ash and acid insoluble ash standards of six and two per cent., respectively, given in Circular No. 19, Office of the Secretary of Agriculture, because the bales were often full of pebbles and dirt. However, after the Food Inspection Officials had rejected an importation, broken China changed for the better, and unless very cheap material is bought the spice grinder has very little trouble with this variety to-day.

Table II shows analyses of samples of other varieties ground in small lots in the laboratory. The flavors of these samples vary from the mild Seychelle cassia to the strong Saigon. The barks with the exception of the Seychelles and Batavias are dark in color, but vary in thickness and shape. The volatile ether extract on which the strength of the flavor is supposed to depend varies remarkably as also does the crude fibre.

TABLE II.—PERCENTAGES.

Variety.	Total ash.	Water soluble ash.	Ash insoluble in HCl.	Volatile ether ext.	Non-volatile ether ext.	Alcohol ext.	Crude fiber.
Seychelle bark (*a*).....	4.08	2.54	0.29	0.66	1.87	9.16	49.49
Seychelle bark (*b*).....	5.49	2.73	0.07	0.70	1.99	9.72	44.66
Ordinary broken China	3.96	0.91	1.24	0.90	2.91	3.76	24.84
No. 1 broken Saigon	3.77	1.25	0.05	3.39	4.13	7.80	25.29
Extra No. 1 Batavia	2.92	0.71	0.09	2.45	2.95	9.07	13.33
Pakhoi rolls	2.62	0.82	0.33	1.16	2.58	8.86	21.07
Coarse Corintjie	3.14	1.09	0.48	2.23	3.52	5.24	28.16
Regular No. 1 Corintjie	5.97	2.08	0.13	1.33	4.45	6.78	19.04
China rolls	2.85	0.64	0.15	1.64	3.32	7.14	24.73
Good short stock Batavia...	4.10	1.67	0.19	2.49	4.10	9.38	14.08
Kwangsi rolls 3rd.....	3.39	1.45	0.21	2.71	4.45	6.78	18.61

Table III gives analyses of twelve samples of ground cinnamon purchased in retail packages and representing the general character of the cinnamon offered to the consumer in the eastern market.

These samples are blends of the different varieties, and with a few exceptions comply with the standards of Circular No. 19. It would appear that by using ordinary caution in buying and blending, no difficulty should be experienced in complying with the standards

TABLE III.—PERCENTAGES.

Samples.	Total ash.	Water sol. ash.	Ash insol. in HCl.	Volatile ether ext.	Non-volatile ether ext.	Alcohol ext.	Crude fiber.
1.....	6.90	1.34	2.64	1.44	2.85	10.68	36.88
2.....	3.37	0.92	0.90	1.83	3.89	6.28	28.88
3.....	6.88	0.78	2.80	1.68	3.80	6.28	31.14
4.....	9.35	0.86	6.11	1.81	3.40	6.80	29.10
5.....	3.44	1.28	0.43	0.67	1.88	7.76	23.40
6.....	3.50	0.85	1.03	1.58	3.80	8.08	25.06
7.....	3.53	1.19	0.49	0.93	2.01	7.66	24.30
8.....	3.88	1.32	0.31	1.03	2.88	6.74	26.96
9.....	4.75	1.07	1.54	1.40	3.01	7.76	23.34
10.....	2.52	0.09	0.15	0.79	1.92	8.46	27.16
11.....	3.50	1.08	0.45	0.72	1.42	6.04	23.74
12.....	4.15	1.34	0.64	0.63	1.91	7.88	26.49

of Circular No. 19 in regard to total and acid insoluble ash. It must be understood that the spice grinder does not practice blending to work in dirty material, but because blending is necessary to obtain the desired flavor that is demanded by the trade.

LABORATORY WEIKEL & SMITH SPICE CO.,
PHILADELPHIA, PA.

ABSTRACT OF REPORT ON MEDICINAL PLANTS AND DRUGS AT THE LAST ANNUAL MEETING OF THE ASSOCIATION OF THE OFFICIAL AGRICULTURAL CHEMISTS.

BY L. F. KEBLER, *Referee.*

During the past year the coöperative work on drug problems in conjunction with the Association of Official Agricultural Chemists has been very satisfactory. The number of coöperators taking part was unusually large and all manifested a spirit of interest in the work. The Referee's report was submitted under the following headings:

1. Methods of Sampling.
2. Methods of Analysis.
3. Inadequate Standards.
4. Results.

It is well recognized that the procuring of representative samples for analytical work is the first important step in securing uniformity of chemical analyses. So long as we are not certain of obtaining samples which represent the total average of the material of a given consignment, we can never rely on the results directly setting forth the quality of the goods handled. In the taking of samples it is necessary to take into consideration the character of the goods to be sampled, the nature of the container, the probable climatic conditions obtaining, and the source of production. Experience covering a number of years shows the difficulty confronting the analyst, and in order to bring about uniform action and ultimately avoiding friction and reassaying, the referee recommended that a committee be appointed to take up the entire subject of drug sampling and report back to the Association at the next annual meeting. It is not unusual to meet with consignments containing hundreds of bales or bags or kegs or pockets or carboys or barrels, etc. The question naturally arising is how many packages shall be sampled in order to obtain material that will fairly represent the commodity under consideration. In the case of ergot, for example, it was found that one bag in ten may be found inferior and it sometimes happens that this one particular bag is selected for sample. The result is that the entire delivery is withheld. On the other hand if one of the other nine bags is sampled, the shipment is released with the result that the inferior package finds its way into the trade. It is exceedingly difficult to sample the bales of a large consigment so as to procure satisfactory results. It has been found that the outside of a bale, for example, will be perfectly satisfactory, whereas, the interior is of an inferior character. The number of bales to be examined is also a difficult matter to determine in every case. For example, one bale of belladonna root will show an alkaloidal content much below that prescribed by the standard, while many other bales of the same consignment comply with the standard. Under these conditions it has been found necessary at times to sample every bale in an entire consignment in order to secure satisfactory results.

Similar questions were discussed in conjunction with gums, resins, oils, products solid at one temperature and liquid at another, semi-solids, balsams, etc.

Methods of Analysis.—In order to arrive at a fair conclusion relative to an article, it is necessary to take into consideration all

factors that may throw light upon the subject. The first point that naturally presents itself is the physical appearance of the commodity. If the article is not of normal appearance, suspicion is aroused immediately. The next two factors of great importance are odor and taste. Any one familiar with these two factors of various crude drugs he is liable to meet is fortunate indeed. Much time may often be saved by submitting a given sample to microscopical examination before applying chemical methods. It is often necessary also to resort to mechanical means to determine the amount of foreign material that may be present in a given sample.

Inadequate Standards.—The Pharmacopœial standards for buchu leaves, for example, makes no provision whatever for the presence of any stems or other incidental foreign material which is liable to find its way into the drug at the time of collection. If such a standard were put into force and effect, the amount of this drug imported into the United States would be exceedingly small. In practice it has been found necessary to allow a certain amount of foreign material referred to above. What has been said in connection with buchu leaves also holds for many other leaves. Imitation balsam Peru complying with the test of the Pharmacopœia in every detail has been met with. It is, however, not identical chemically with the natural product, neither has it been shown that its therapeutic properties are the same. The test prescribed by the Pharmacopœia for morphin sulphate permits the presence of a considerable quantity of codein and other alkaloidal bodies derived from opium. In case the chemist is examining a sample of morphin sulphate according to the test prescribed by the Pharmacopœia and it complies in every respect with this test, he must of necessity report it as satisfactory. If this morphin sulphate containing a goodly proportion of codein is now used in the manufacture of morphin sulphate tablets or other mixtures in which the morphin sulphate present is an important part, and the analyst discovers codein he immediately infers that the original material was contaminated with this alkaloid, or the product is not properly named, or may even be misbranded in view of the fact that the codein is not declared, a condition which might cause some embarrassment.

The standards for the essential oils and the methods for arriving at same are very inadequate, as most analysts know. In fact, there is no difficulty whatever in manipulating some of the oils so as

to comply with the standard prescribed in accordance with the methods detailed for arriving at same.

The standard for copaiba also is decidedly inadequate, it is believed, largely for the reason that we know so little about the actual composition of this commodity. In order to eliminate many of the uncertainties it will undoubtedly be necessary to study the article from the source of production to the time of consumption.

Results.—These can best be indicated by giving short résumés of the subjects considered which follow:

H. H. Rusby, Associate Referee on macroscopic and microscopic study of plant drugs, has been working on the subject of providing adequate descriptions for crude plant drugs not available at present. This will necessitate elaborating some of the standards for certain Pharmacopœial drugs.

Medicated Soft Drinks.

By G. W. Hoover, *Associate Referee.*

The work was confined to the determination of constituents (caffein, cocain, phosphoric acid) and the estimation of the total solids. The coöperative sample was prepared so as to represent as far as possible a number of preparations which have been found upon the market.

The results obtained by a majority of the chemists in the determination of caffein was satisfactory. The figures show that if the method outlined is carefully followed, concordant and accurate results will be secured. The caffein is obtained quite pure without subjecting it to a special method of purification.

The results for cocain were slightly low. The quantity in the preparation, however, compared with caffein, is quite small, and in view of the complex composition of the mixture, the results obtained in the estimation of cocain were also satisfactory.

The method outlined for phosphoric acid is quite lengthy, but the results showed that if it is strictly followed, an accurate determination of this constituent can be made.

The results of the method for the determination of total solids showed too wide a variation. It was found that more concordant results were obtained by using a comparatively small quantity of the sample (2 to 4 grams) than by using a larger quantity, and it is evident that further work upon the determination of total solids is necessary.

Report on Headache Mixtures.

By W. O. Emery, *Associate Referee.*

In the past the coöperative work has had to do with mixtures of the referee's compounding, while that of the year just completed involved commercial products obtained on the market. The preparations were in tablet form. Twenty tablets together with the necessary directions for procedure were furnished each of the dozen co-workers. One mixture sent out contained as active ingredients caffein, and acetphenetidin; another, codein, acetanilid and sodium salicylate; and a third, codein sulphate, antipyrin and acetphenetidin.

In general, the results may be considered very satisfactory in view of the inherent difficulties peculiar to certain preparations involved; more particularly, however, for the reason that probably one-half of the collaborators had not had any previous experience with such work, all of which indicates that the methods submitted are correct in principle and need only to be varied in detail to meet the problems arising from special combinations.

A method was devised in connection with the examination of mixtures containing caffein, acetanilid, quinin and morphin. The separation is based on the solubility of caffein and acetanilid in chloroform, while the sulphates of quinin and morphin are insoluble in this reagent. The alkaloids were separated from each other by virtue of the insolubility of sodium morphinate in the aforesaid solvent, the morphin itself being finally extracted as such with chloroform (carrying a little alcohol) from an aqueous solution containing common salt in excess together with a little ammonium salt.

W. O. Emery and C. D. Wright: A study of aspirin tablets and capsules was undertaken, more especially melting temperature alone and in admixture with salicylic acid in various proportions, and finally the acid values of these compounds.

C. C. LeFebvre investigated the method of determining salol alone as well as in admixture with acetphenetidin, having already succeeded in estimating salol both in separate form and in original tablets by hydrolyzing into phenol and salicylic acid and subsequently titration with a standard bromine solution.

Coöperative Work on the Determination of Camphor.

By E. K. Nelson.

A sample of Spirits of Camphor, prepared carefully according to the Pharmacopœia was submitted to twenty-three analysts for the determination of camphor by the hydroxylamine titration method as outlined in Circular No. 77 of the Bureau of Chemistry. The results reported by nineteen analysts varied from 8.33 per cent. to 9.72 per cent., while four analysts found slightly more camphor than was actually present.

The average of all results reported was 9.02 per cent. or a deficiency of nearly 10 per cent., figured on the camphor actually present. The consensus of opinion as expressed by the various analysts was that the conversion of camphor into oxim was not complete. The method can not, therefore, be recommended for exact work.

The Determination of Small Quantities of Pepsin in Liquids.

By V. K. Chestnut.

The method used in this work was essentially the Jacobi procedure as modified by Solm. A .4 per cent. solution of U. S. P. pepsin in N/10 hydrochloric acid previously saturated with chloroform was sent out together with some standard pepsin and ricin. The sample was analyzed by seven coöperators. The results reported varied widely. One analyst reported 1 per cent., but the others found between 0.09 and 0.38 per cent. The particularly interesting feature of the results was that the reports seemed to indicate a somewhat uniformly progressive decomposition of the pepsin due perhaps partly to the summer temperature and agitation to which they were subjected or to the action of the chloroform added to the hydrochloric acid to conserve the pepsin against the action of molds. The highest percentage found was obtained at Washington in a sample kept in cold storage and analyzed three days after it was made up. The same sample yielded only 0.2 per cent. 40 days later, and another held at room temperature during the 40 days gave only 0.1 per cent.

Estimating Nitroglycerin in Tablets.

By A. G. Murray.

Coöperative work on nitroglycerin tablets was carried out on two samples. Nineteen collaborators reported. Considering the rather complicated nature of the methods, the minute quantity of nitroglycerin to be determined, and the lack of experience with the methods of many of the collaborators, the results were as good as could be expected. The completeness of the extraction of nitroglycerin from the tablets should be investigated.

A Study of the Lead Number of Asafœtida and Allied Products.

By N. C. Merrill.

This is a method of measuring the lead precipitate of asafœtida and various other similar products by precipitation of a gram sample of the ether purified resin (dried five hours at 110° C.) by means of a 5 per cent. lead acetate solution in 80 per cent. alcohol. The uncombined lead is determined by filtering off an aliquot portion and determining the lead as sulphate. By carrying a control test the amount of lead combined may be calculated from the difference of the two, and the lead number expressed in terms of milligrams metallic lead per gram of sample.

The following results have been obtained:

Asafœtida 222, galbanum 4, ammoniacum 75, olibanum none, guaiac 171, myrrh 7, colophony 142, bedllium 55, sandarac 251, mastic 34, gamboge 9, dragon's blood 0, euphorbium 34, "pepper asafœtida" 82.

This method gives results which may be checked by independent workers although the value is not absolute on account of incomplete drying of the ether purified resin. It is, however, sufficient to give comparative results.

Coöperative Results on Morphin Estimation.

By H. E. Buchbinder.

The method studied was that proposed by Eaton. The main features of the method for opium are as follows:

The opium is digested in lime water, the lime water is filtered and an aliquot taken. The latter is shaken out repeatedly with chloroform to remove other alkaloids, then ammonium chloride is

added and the morphine is shaken out with a mixture of chloroform and alcohol. The latter is evaporated and the residue titrated with standard acid and standard alkali.

The methods for paregoric and syrup are adaptations of the opium method.

The results of the collaborators showed that in case of powdered opium the conditions prescribed do not insure the complete exhaustion of the powder, also that it is practically impossible to get rid of the other alkaloids by direct extractions. The results on paregoric were decidedly better than those on opium, but were not altogether satisfactory.

On the Estimation of Morphin.

A paper by H. E. Buchbinder gave the results of a study of a number of topics having a bearing on certain analytical methods for morphin.

1. *Does chloroform take up morphin from an alkaline (fixed alkali) solution?*—It was found that with a certain excess of alkali the amount taken up is negligible.

2. *Chloroform plus alcohol as a solvent for morphin.*—In this connection the distribution of alcohol between chloroform and water as well as solubility of morphin in chloroformic alcohol and aqueous alcohol, were studied.

3. *Chloroform alone as an extracting solvent.*—Conditions were found under which small quantities of chloroform can be used with great convenience to extract morphin from an aqueous solution. This is made possible by the conversion of the morphin into a form ten times more soluble than the ordinary "crystalline" variety.

4. *The Eaton methods.*—The chief defect is the practical impossibility of removing the other alkaloids from the lime water solution. A "negative" test is misleading.

5. *An error of the U. S. P. method.*—The amount of morphin remaining in the mother liquor was found to be about 140 mgms.

6. *New methods for opium and opiates.*—The salient features are: First, the use of chloroform alone as an extracting solvent for morphin; second, the use of barium salts as precipitants of resinous impurities, thus entirely overcoming the difficulty of emulsions.

The following is a brief outline of the proposed method for powdered opium.

The initial extraction of the powder is effected by digestion with hot water, followed by the addition of 10 per cent. sodium hydroxid and shaking during a short interval. The solution is saturated with salt, diluted with saturated salt solution, and after the addition of barium chlorid, is made up to volume with saturated salt solution. After filtration an aliquot is taken. The latter is acidified with concentrated hydrochloric acid and then rendered ammoniacal with concentrated ammonia, the quantities of the acid and the ammonia being carefully regulated so as to secure certain definite concentrations of free ammonia and ammonium salts. After the addition of some alcohol, the morphin, accompanied by a certain amount of other alkaloids, is extracted with chloroform. A few extractions with very small quantities of a saturated salt solution containing about 2 per cent. of sodium hydroxid, take out all the morphin from the chloroform extract. The almost negligible amount of other alkaloids carried by the alkaline-salt extractions is removed by means of one or more shake-outs with chloroform. The morphin is then re-extracted with chloroform under conditions similar to those in the first extraction with chloroform. After the evaporation of the chloroform, the residue is titrated by means of standard acid and alkali. With experience the entire analysis can be completed within 2½ hours.

Methods are also offered for laudanum, paregoric, etc. These are adaptations of the basic method—that for opium.

A Comparison of Values Obtained for the Refractive Indices of Aqueous Solutions of Ethyl and Methyl Alcohols.

By B. H. St. John.

This paper embodies the comparison of the values obtained by different investigators for the refractive indices of the aqueous solutions of ethyl and methyl alcohols reduced to the same temperature by means of the temperature coefficients given by Doroshevski. The values compared are those of Deville, Wagner, Leach and Lythgoe, and Doroshevski, and Andrews for ethyl alcohol; and of Drude, Wagner, Leach and Lythgoe, and Doroshevski for methyl alcohol.

INTERNATIONAL CONGRESS ON HYGIENE AND DEMOGRAPHY.

By M. I. Wilbert, Washington, D. C.

The Fifteenth International Congress on Hygiene and Demography, held in the City of Washington, September 23–28, 1912, was attended by official representatives from 24 of the more important nations of the world. Few, if any, meetings of a distinctly medical character have attracted as wide-spread attention in lay circles, particularly in the daily papers, as this congress and the reason no doubt is that the great mass of the people are beginning to appreciate the value of health and are alive to the truism so frequently heard that "prevention is better than cure."

President Taft, himself a member and the honorary president of the congress, in welcoming the congress to America, called renewed attention to this truism and pointed out that while the science of medicine and surgery had made wonderful progress during the last forty years it would seem as if the science of sanitation, hygiene and preventive medicine had come into being from nothing and had developed with such rapidity and success that we may yet expect to find the fountain of youth and perpetual life sought for by some of the early discoverers of this country.

He also pointed out that there is reason to believe that the present United States Public Health Service will develop into a bureau of research for evolving a rational system of practical hygiene and preventive medicine. The practical results of the work already accomplished in Cuba, Porto Rico, the Philippines, and latterly in the Canal Zone by American sanitarians have so enlarged our knowledge of the possibilities of successful sanitation, under the most burdensome conditions, that the problem of making the tropics habitable for white people appears to be all but solved.

The 300 or more papers included in the official program were discussed in 9 sections and in the joint sessions and plenary sessions that had been arranged. Altogether it may be said that, despite occasional differences of opinion on matters of theory regarding which no definite information is available, the safeguarding of the health of human beings was discussed on broad, practical lines and with a general absence of the hysteria and the unfounded assertions that have all too frequently characterized the statements of many of our self-appointed guardians of the public health.

Because of the comprehensiveness of the program it will be impracticable to call attention to more than the general object of the program of each particular section.

Section I.—Hygienic Microbiology and Parasitology, presided over by Prof. Theobald Smith, Harvard Medical School, devoted itself largely to the discussion of the causative factors of diseases, their study and control.

Section II.—Dietetic Hygiene; Hygienic Physiology, presided over by Prof. Russell H. Chittenden, Scheffield Scientific School, Yale University, presented a very comprehensive program in which the general subjects of nutrition and the relation of food to metabolism and to the general health of man were discussed from practically every point of view. Men of international repute who have made dietetics a specialty took part in the discussions and it is quite probable that never before have so many well-known men taken an active part in a program of this kind. Among the men present were Max Rubner, Berlin; Carl von Norden, Vienna; Axel Holst, Christiana; Archibald B. Macallum, Toronto, and practically all of the leading bromatologists of this country.

Section III.—Hygiene of Infancy and Childhood, presided over by the Nestor of American Medicine, Dr. Abraham Jacobi, was devoted to the discussion of problems of prime importance to future generations of the human race.

Section IV.—Hygiene of Occupation, presided over by Dr. Geo. M. Kober, Prof. of Hygiene, Georgetown University, Washington, was devoted to the discussion of plumbism and other occupational intoxications, and also the diseases and injuries characteristic of different occupations. As a practical result of the discussion on these subjects it was subsequently recommended that notification and returns of occupational diseases be made in a uniform manner by international agreement so that the resulting data would be available and would prove to be useful in the development of the necessary preventive measures.

Section V.—Control of Infectious Diseases, presided over by Dr. Herman M. Biggs, General Medical Director, Department of Health, New York City, discussed various disease carriers and other methods of spreading infectious diseases, the use and abuse of disinfectants and the possible control of different diseases by sanitation and other preventive measures.

Section VI.—State and Municipal Hygiene, presided over by

Dr. Frank F. Wesbrook, Professor of Pathology, University of Minnesota, Minneapolis, discussed, chiefly, the problems of water supply and the disposition of waste products in cities and towns.

Section VII.—Hygiene of Traffic and Transportation, presided over by Dr. Rupert Blue, Surgeon General, United States Public Health Service, Washington, discussed the powers and duties of government in respect to the hygiene of traffic and transportation, the sanitary supervision of common carriers, the protection of their employees and the protection of the public through systematic supervision of employees.

Section VIII.—Military, Naval and Tropical Hygiene, presided over by Medical Director Henry G. Beyer, U. S. Navy, Washington, discussed camp hygiene, general prophylactic measures and vaccines and other means for preventing the spread of infectious diseases.

Section IX.—Demography, presided over by Prof. Walter F. Willcox, President of the American Statistical Association, Cornell University, Ithaca, discussed vital statistics and the importance of demography to the welfare of the human race.

The value of vital statistics for a systematic development of public health work is being more and more appreciated and the work of this section attracted an unusual amount of attention. The further development of this particular branch of the work is outlined by the recommendation of the Congress that in every country statistics of births, deaths, marriages and divorces be published periodically and, if practicable, annually. The importance of such compilations from a sociologic as well as hygienic point of view is evident as no practical advance can be made unless existing conditions are well known and clearly recognized.

Any account of the Congress on Hygiene and Demography would be incomplete without a more or less extended reference to the remarkable "Exhibition on Health" that was developed under the able direction of Dr. J. W. Schereschewsky of the United States Public Health Service. This exhibition was designed to show the public health work of the several states and larger municipalities. The exhibition opened September 10, was continued for three weeks and attracted upwards of 100,000 visitors to the 1,000 or more exhibits in the 13 sections into which the exhibition was divided.

The titles of the several sections give but a meagre suggestion

of the wealth of material that had been gathered together as a practical demonstration of the work that is now going on in various lines of public health work and scientific research.

Of special interest to pharmacists were the exhibits made by the Bureau of Chemistry of the Department of Agriculture showing the development of the work in connection with the enforcement of the food and drugs act. The exhibition of deleterious, or otherwise objectionable products made by the drug laboratory of the Bureau of Chemistry was particularly notable and attracted considerable attention.

Another exhibit and one that will have a marked, though perhaps not an immediate, influence on the practice of Pharmacy in America was that made by the American Medical Association. This exhibit was probably the most comprehensive arraignment of so-called "patent" medicines that has ever been made in a popular exhibition and proved to be unusually interesting and attractive to the average attendant at the exhibition. There were probably but few of the many hundreds of exhibits that were more carefully studied by persons who appeared to be interested than the propaganda for reform show of the A. M. A. In consideration of the novelty and of the interesting nature of the exhibit it was given a certificate of superior merit by the Committee on Awards.

The success attending this, the first popular exhibit made by the American Medical Association should serve as an incentive for the officers of the Association to take part in other exhibitions that are designed to promote the general welfare of the public. In this way it would appear to be a comparatively easy task to arouse public opinion and to discourage the advertising of nostrums in the daily and other papers that are at all desirous of supplying the wants and of complying with the opinions of their readers. The discontinuance of advertising in respectable papers would naturally result in the rapid decline of the sale and use of "patent" medicines and, as suggested above, would undoubtedly have a very marked effect on the future development of pharmacy in this country.

The many hundreds of exhibits that were housed in the exhibition hall served to illustrate practically every phase of hygiene and sanitation, from the hygiene of infancy to that of old age and from the supply of water and healthful food to the disposition of

waste and the treatment of sewage, and would require volumes for an adequate description.

In addition to the exhibition proper there was, in two lecture halls, a succession of demonstrations, with stereopticon slides and moving pictures showing the public health work that is now in progress in various sections of the country.

The general popularity of the exhibition and the accompanying public lectures is well reflected by the proposition, already voiced by many of the daily papers in and around Washington, to develop a permanent exhibition on health and hygiene that could, at least in part, be carried to different sections of the country for the practical instruction of the people in matters relating to hygiene and sanitation.

With such a permanent exhibition as a possibility and with the incentive of the international congress on hygiene and demography actively at work in all sections of our great country we can readily agree with the assertion made by President Taft, in his opening address, that such congresses make for the permanent improvement of the human race, they create a deeper love in man for man, they stir up a greater human sympathy and they assure to the scientific student who is willing to devote his life to the development of truths designed to promote the health and comfort of his fellows a reward that cannot be measured in money but is to be found only in the consciousness of the highest duty well done.

THE SIXTIETH ANNUAL MEETING OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

By Joseph W. England.

The sixtieth annual meeting of the American Pharmaceutical Association was held at Denver, August 19th to 24th, 1912, and was one of the busiest of recent years. The number in attendance was over four hundred, representing thirty-eight states. The sessions were numerous; at one time there were five simultaneous sessions. A Section on the U. S. Pharmacopœia and National Formulary was created. A large number of papers were read, discussions were frequent, and interest in the work was general.

Probably, the most important step taken at the meeting was the formation of a House of Delegates. Although of the same name as

that of the governing body of the American Medical Association, its functions and duties are radically different. The step is a tentative one; the body may be given larger powers in the future or it may be abolished if it fails to meet the needs of the Association.

Originally, the American Pharmaceutical Association was a delegate-body, delegates being sent by colleges of pharmacy and pharmaceutical organizations to the annual meeting, the thought being that by making the Association an association of delegates, the cities would be encouraged to form local organizations in order to secure representation, but it was decided that such a procedure would tend to make the Association subject to the control of the local organizations and it was abolished, and individual membership became dominant. Strange to say, however, that while the delegate-system as the controlling power of the Association was abolished, the system itself was continued, but with the delegates having no duties to perform. Hence, the attendance of delegates became perfunctory. It is true that many of the delegates exerted, as individual members, an important influence on the councils of the Association, but it was felt, at Denver, that this influence could be widely extended and made potential for the good of the Association, if the delegates were given specific duties.

The membership of the House of Delegates will consist of three regularly elected or appointed delegates from Local Branches of the American Pharmaceutical Association, State and Local Societies, Colleges and Schools of Pharmacy, and delegates from the National Association of Retail Druggists, National Wholesale Druggists' Association, American Medical Association, National Association of Boards of Pharmacy, Women's Organization of the National Association of Retail Druggists, National Association of Manufacturers of Medicinal Products, American Chemical Society, Association of National and State Food and Dairy Departments, Association of Official Agricultural Chemists, and from the departments of the Army, Navy and Public Health and Marine Hospital Service, the American Association of Drug Clerks, the credentials of whom shall all be approved by the Council; together with five members of the Council appointed by the Chairman of the Council. The President, President-elect, Treasurer, General Secretary and the Chairman and Secretary of the Council shall be members ex-officio.

The House of Delegates will exercise the following functions:

1. To receive and consider the reports of delegates from the bodies which they represent in the House of Delegates.

2. To consider and report upon such resolutions, and upon such other subjects as may be referred to the House of Delegates by the Council, by the Sections or by the Association in general session.

3. To make a final report of the business transacted to the final session of the outgoing Council at each annual meeting.

4. It shall have authority to adopt all rules and regulations necessary to the proper conduct of its business and not inconsistent with the Constitution and By-Laws of the Association and the Council.

It should be noted that the House of Delegates can exercise such functions only as have been specified, or may be hereafter specified, by the Council. It cannot *initiate* resolutions, but can consider or redraft only those referred to it by the Association, Sections or Council. It is in effect, a clearing-house where resolutions can be referred and proposals moulded into shape for consideration by the Council—which still remains the executive body of the Association—and which, in turn, reports to the general assembly. In this way, questions can be fully and thoroughly discussed before the House of Delegates, both by delegates and members, and the business of the Association, Sections and Council expedited.

The House of Delegates will be the connecting link between the colleges of pharmacy and pharmaceutical organizations and the Association, so that co-operation and co-ordination of work can be secured. When delegates are appointed to attend meetings of a delegate body they naturally bring with them the wishes of the bodies they represent, and when they return, they carry back the results of their deliberations.

In this way, there can be had closer connection in work and reciprocal action, and the Association can better represent the interests of the whole country and be, in effect, what it should be, a more truly national organization.

The address of President J. G. Godding was suggestive and practical, embracing such subjects as the National Formulary of the American Pharmaceutical Association, Pharmaceutical Syllabus, American Pharmaceutical Association Recipe Book, National Association of Retail Druggists, State Associations, Membership, International Congress of Pharmacy, Pharmacists in the Government Service, Conference of Food and Drug Chemists, Drug Reform, Local Branches, Prerequisite Laws and Business of the Association, etc.

The report of Treasurer H. M. Whelpley was exceedingly satisfactory. With the exception of about a dozen delinquent members, all the members of the Association are in good standing. The assets of the Association amount to over fifty thousand dollars.

The report of J. H. Beal, General Secretary and Editor of the Journal, showed a very satisfactory condition of the affairs under the direction of General Secretary and Editor, and augurs well for the future of the Association.

W. S. Richardson presented a report for the Committee on National Legislation reciting the work of the committee during the past year, and detailing the admirable legislative work done at Washington during the past session of the Congress.

The addresses of the chairmen of the different sections were of an unusually high type.

Chairman P. Henry Utech, of the Section on Pharmacy and Chemistry, submitted some very practical considerations upon the origin, growth and development of pharmacy, its uplifting agencies, its commercialism, and its model conditions.

Chairman John C. Wallace, of the Section on Education and Legislation, presented a characteristically strong address upon the subject of the endorsement of state drug laws, legislative standards, educational requirements, proposed pharmacy laws and the establishment of a National Legislative Conference, in which he gave the section the benefit of his extended and valuable experience in pharmaceutical legislation.

Chairman Ernest Berger in his annual address dwelt most strongly upon the importance of the Section on Commercial Interests to the American Pharmaceutical Association and the necessity for expanding the work of the Section.

In the absence of the chairman and secretary of the Section on Scientific Papers, F. R. Eldred, associate member of the committee, presided as Chairman, and F. P. Stroup acted as Secretary. A number of valuable papers were presented on drug reform, drug market, physiological testing and drug standards. The papers upon standards for identity, purity and strength of drugs were much in evidence.

The paper of Dr. H. H. Rusby on "The Legal Aspects of the Pharmacopœia" elicited especial attention, his recommendations dealing with standards of both the U. S. P. and N. F.

Chairman Otto Raubenheimer of the Historical Section presented

a valuable review of pharmaceutical history with his usual wealth of detail.

Edward Kremers, Historian, resigned, and the Council elected Caswell A. Mayo to succeed him.

The papers presented by the Historical Section covered a wide range of subject matter and elicited much discussion.

A joint meeting of the Committees on U. S. Pharmacopœia and National Formulary was an exceedingly interesting one. L. D. Havenhill acted as Chairman, and E. Fullerton Cook as Secretary.

The importance of the U. S. Pharmacopœia and National Formulary in their relation to the Food and Drugs Act has made it necessary for the revision of these works to proceed with much caution and it was felt that a Section on the U. S. Pharmacopœia and National Formulary had now become a necessity in the work of the Association. Later, the proposition to create a Section on U. S. Pharmacopœia and National Formulary was considered by the Council and approved.

At the final general session the Association expressed the opinion that final action with reference to any matters connected with the Pharmaceutical Syllabus shall occur only in a regular meeting of the committee of twenty-one.

It will be interesting to know that a Women's Section of the American Pharmaceutical Association has been created and this is expected to increase the interest of the "silent partners" who attend the annual meetings.

The interest in the work of the American Conference of Pharmaceutical Faculties was pronounced, especially in the subject of standardizing the courses of instruction. One of the most important papers presented was the report of the Committee on Pharmaceutical Degrees outlining certain requirements for the several degrees of pharmacy. Action on this was postponed.

The report of the Committee on Pharmaceutical Syllabus was presented also. The Conference decided that final action on matters relating to the Pharmaceutical Syllabus be taken only at the regular meeting of the committee of twenty-one, and that nothing be definitely decided by correspondence.

The National Association of Boards of Pharmacy includes in its members forty state boards, and its President, R. H. Walker, presided in a most able manner. Probably the greatest share of the discussion was upon the subject of reciprocal recognition of

registration to practice pharmacy. The Association decided to issue a guaranty which would entitle the holder to registration without examination by any of the state boards of pharmacy having membership in the National Association, without being required to show further proof that his original registration was obtained under conditions meeting the requirements of the Association. This certificate will be issued to any person registered by any board having membership in the Association, on the payment of $5.

Another certificate proposed was one that would be accepted as registration by the affiliated state boards. This one was to cost $25.

A suggestion that graduation in pharmacy be made pre-requisite to reciprocal registration was approved.

Professor W. B. Day, the new President, is a professor and Secretary of the University of Illinois School of Pharmacy (Chicago College of Pharmacy), and for several years past has been the very efficient Chairman of the Committee on Membership of the American Pharmaceutical Association. His election to the Presidency of the Association is well deserved.

The officers elected for the year 1912–1913 are as follows:

President, W. B. Day, Chicago; First Vice-President, Chas. M. Ford, Denver; Second Vice-President, Caswell A. Mayo, New York; Third Vice-President, C. Herbert Packard, Boston; Secretary, J. H. Beal, Scio, Ohio; Treasurer, H. M. Whelpley, St. Louis; Reporter on the Progress of Pharmacy, C. Lewis Diehl, Louisville.

House of Delegates—Chairman, W. C. Anderson, Brooklyn; Vice-Chairman, C. M. Snow, Chicago; W. S. Richardson, Washington; Secretary, Miss Clarissa M. Roehr, San Francisco.

Section on Scientific Papers—Chairman, F. R. Eldred, Indianapolis; Secretary, F. P. Stroup, Philadelphia; Associates, J. M. Francis and W. L. Scoville, Detroit.

Section on Education and Legislation—Chairman, W. J. Teeters, Iowa City, Ia.; Secretary, F. H. Freericks, Cincinnati; Associates, Miss Zada M. Cooper, Iowa City, Ia.; Hugh Craig, New York; Louis Emanuel, Pittsburgh.

Section on Practical Pharmacy and Dispensing—Chairman, L. A. Seltzer, Detroit; Secretary, F. W. Nitardy, Denver; Associate, Cornelius Osseward, Seattle.

Section on Commercial Interests—Chairman, A. V. Pease, Fairbury, Neb.; Secretary, W. R. White, Nashville, Tenn.; Associates,

H. C. Shuptrine, Savannah; G. C. Kendall, Meridian, Miss; W. H. McCutcheon, Luther, Okla.

Section on Historical Pharmacy—Chairman, J. G. Godding, Boston; Secretary, F. T. Gordon, Philadelphia; Historian, Caswell A. Mayo, New York.

Section on U. S. Pharmacopœia and National Formulary—Chairman, L. D. Havenhill, Lawrence, Kan.; Secretary, E. Fullerton Cook, Philadelphia.

Officers of the Council for 1912–1913—Chairman, E. G. Eberle, Dallas; Vice-Chairman, F. C. Godbold, New Orleans; Secretary, J. W. England, Philadelphia. New members of the Council: W. C. Alpers, New York; F. C. Godbold, New Orleans; L. E. Sayre, Lawrence, Kan.

American Conference of Pharmaceutical Faculties—President, Prof. A. H. Clark, Chicago; Vice-President, Prof. Albert Schneider, San Francisco; Secretary and Treasurer, Prof. C. W. Johnson, Seattle; new members of the Executive Committee: Profs. C. E. Vanderkleed, Philadelphia, and C. E. Caspari, St. Louis.

National Association of Boards of Pharmacy—President, William Mittelbach, Boonville, Mo.; Vice-Presidents, I. P. Gammon, Boston; H. C. Shuptrine, Savannah, and Miss Kittie W. Harbord, Salem, Ore.; Secretary, A. F. Sala, Winchester, Ind.; and member of Executive Committee, J. C. Burton, Stroud, Okla.

The City of Denver was most generous in its hospitality. The Local Committee spared no effort to see that every one had a most enjoyable time. With trolley trips to the foothills of the Rockies, with a matinee, with a visit to the Wilmore Dahlia Farm, and particularly with the trip to Glacier Lake, and Boulder, which has an altitude of 9,600 feet, and is reached after a four hours' trip by rail from Denver over a road that zigzags its way along the edge of the valleys that have made the name of Boulder famous. At the lake luncheon was served. On the return trip, the party, numbering almost 450, stopped at the City of Boulder, where the University of Colorado and the mountain-side park system were inspected, and refreshments and music were enjoyed.

PHARMACEUTICAL MEETING.

The April Pharmaceutical meeting was held on April 12, 1912, Mr. E. M. Boring presiding. Mr. Miers Busch, a trustee of the College and a member of the firm of Shoemaker & Busch, gave a very interesting talk on

"RUBBER AS IT CONCERNS THE RETAIL DRUGGIST."

Mr. Busch said there was not time to take up the subject of the cultivation of the trees, or the gathering of the crude material from wild grown plants, it is sufficient to state that crude rubber of various kinds is gathered in many parts of the world.

That known as "Up-River Para" is regarded as the best, and at the same time is the standard of comparison by which the prices of other varieties are fixed. On account of the large demand during the last few years, it has paid to instruct the native gatherers of wild rubber how to use more care in gathering it and preparing it for the market, with the result of making Ceylon and African rubber more available as a substitute for Para.

A recent Consular report on the World's Rubber Trade gives the following statstics for 1911: Total exports from the Amazon Basin, 79,250,000 pounds, of which the United States received 35,500,000 pounds, Europe 43,250,000 pounds, some of the latter being reshipped to the United States. The Federated Malay States exported of cultivated rubber during 1911, 19,636,000 pounds, an increase over 1910 of 7,500,000 pounds. The value of the India rubber imported into the United States during 1911 was $74,500,000, of which $25,500,000 came from Brazil and $23,500,000 from the United Kingdom; apparently the East India shipments amounted to only $5,500,000.

"Druggists' Sundries" were for years apparently made by all factories from good Para stock, but when the advance occurred, which, roughly speaking, increased the price from 85 cents to $2.50 per pound, strong efforts were made to introduce other kinds, often with disastrous results to the goods furnished.

Until recently, apparently little attention was given to the chemistry of rubber—that is, while every large steel plant has a well equipped laboratory, working with the crude materials purchased, and sending down exact instructions how to combine them so as to

standardize the product, a rubber factory depends largely upon the selection of crude materials by the buyer, and upon the skill of the "compounder" in working it up. The "compounder," let me say here, is the highest paid man in the factory, and his methods are personal rather than trade secrets, and are rarely divulged even to others in the same plant.

I hear that Buchtel College, at the suggestion of the Akron factories, has provided a course of training in the examination and testing of crude rubber. I have not been able to learn whether any students have been graduated or what the practical results.

One New York factory engaged, I hear, two expert chemists who, working separately, produced very different results from the examination of samples taken from the same lumps of rubber, so the firm went on in the former way. All this leads to the following summary of conditions:

1. Most of the crude rubber is gathered by comparatively ignorant persons.

2. It is prepared by them without much supervision.

3. It is packed in cases without much grading, excepting that the contents of the case is probably from the same district.

4. It is sold in large lots, of a number of cases.

5. It is then worked up in various combinations, as the cases may be opened.

6. It is then put through a manufacturing process during which it is liable to destruction many times.

Under such conditions we should admire the skill of the men who can place before us goods that look so well and will stand such hard usage.

People seem to think that articles made of rubber are indestructible; in reality they are nearly as fragile as glass bottles, but, like glass, will last a long time if properly cared for.

Crude rubber shrinks steadily, and the loss of weight from time of casing until put into the washers may be as much as 20 per cent. This loss is borne by the holder, as he is paid only for actual weight at the time of delivery. When washed and dried, which process causes additional loss of weight, the manufacturer knows for the first time what the stock actually stands him. Starting from this stage, the rubber is made up to meet the wants of the retail druggist, and at the outset keep in mind that it is made up in five radically

different ways, and that the troubles of which many people complain are caused by the selection of the wrong kind of goods.

These classes are as follows:

1. *Pure Gum.*—Goods requiring either elasticity, as rubber bandages, surgeons' bandages, rubber dam, etc., or where the use of other ingredients would be objectionable, as in laboratory stoppers, pure gum tubing, etc. Such goods are made from simply pure rubber of one kind, washed, dried, and rolled with powdered sulphur sprinkled over it before curing, coloring added if desired.

2. *Dipped goods,* made by dipping china forms into a solution of rubber, the process being continued until the desired thickness is obtained. The solution often contains a mixture of two or more kinds of rubber, besides coloring matter and possibly other ingredients, so that while some dipped goods, such as surgeons' gloves and finger cots, are to a certain extent elastic, the rest, such as water bottles, are simply flexible.

3. *Cloth inserted or cloth lined.* A class in which the rubber coating, either spread upon a fabric or rolled into it so as to be partly incorporated, is used to make the fabric air or water tight and at the same time secure flexibility, such as air cushions, rubber sheeting, etc.

4. An especially fine compound used for catheters, rectal tubes, etc., the quality and process of manufacture differing greatly from that of other lines.

5. *Compound goods,* broadly speaking, those with which the public is most familiar. To-day almost the entire line of druggists' sundries is offered in these five lines, some factories confining themselves to one or two types, others making all.

While the goods produced by these various methods are to a degree satisfactory for the use intended, each has its advantages and limitations, the result being "talking points" for the salesman, and a wide range of points for the purchaser.

Moulded goods which are rapidly increasing in use and favor are simply "compounds" cured in iron moulds, which method avoids seams and binding strips, besides producing goods of attractive appearance and effecting a saving in the cost. Compound goods consist of pure rubber mixed with whiting, zinc oxide, scrap rubber of one of a dozen grades, and of various ingredients that will produce certain colors after the goods are cured. As this compound is a mechanical mixture of rubber and materials, neither flexible nor

elastic, the result of stretching is merely to separate the rubber skeleton, as it were, and allow the other materials to fall out. A good "compound" in my judgment still produces from a mechanical point of view the best goods and those that last the longest. Pure gum-dipped goods and the poor "compounds" spoil most quickly. Thick stock or heavy weight goods must not always be accepted as of superior quality. The manufacturer may run a low grade stock and depend upon thickness for safety and appearance for sale. One factory makes "compound goods" that appear hard when first received, and the surface has a crystalline appearance, yet I have seen such goods in my stock for about six months sent out without receiving a single complaint or return. Probably when the bottles made of this material are filled with warm water they become flexible and last well.

Much curious information may be obtained from salesmen who know little of the business, and if you have time you may enjoy the entertainment they afford. For instance, by standing on partly filled water bottles, stretching "compound" water bottles and tubing, showing fountain syringes with large tubing and small outlets, sawing soft wood with dressing combs, absolutely guaranteeing 50 per cent. plaid, screw-cap, ice bags, etc. Common sense, of course, will tell you that goods are made with a view to their intended use, and that such demonstrations prove nothing.

Let us consider for a few moments the subject of "compound goods," taking the water bottle as an illustration. After goods are made up they are subject to the curing process, and here I wish to impress upon you the following very important point: this curing is similar to baking a loaf of bread in that it changes entirely the character of the dough, but, on the other hand, it is at the same time a process of destruction. To illustrate: suppose that the life of a water bottle from the time it is finished, but not cured, until it becomes hard and useless, be represented by the length of a yard stick, 36 inches. The curing uses up 5 inches, the time in the factory or jobbing house consumes 5 inches, the time in retail store constricts it 6 inches, so that there is left for the consumer 20 inches. If the bottle be overcured, 12 or even 18 inches of the life of the bottle may have been used up, the difference in length of wear is lost to the consumer, as the time limit remains the same. Overcuring is, however, the rarest trouble and may be considered last. From the moment the bottle is made the process of destruction goes

on; if kept in a comparatively tight box away from air currents the chances of preservation are greatly improved.

When water bottles were packed in square boxes, which necessitated a fold in the bottle and were kept in a very cold room, it sometimes happened that when an attempt was made to straighten out the bottle quickly it cracked in two. Factories to-day, as a rule, pack all bottles flat, and some use paraffin paper to wrap goods before placing in boxes.

Experiments are constantly being made with varnish-like preparations that can be applied to the outside of such goods to protect them from the action of the air, at least while in the hands of the dealers. When a box is opened for display trouble begins. You will soon find that the exposed side of a water bottle is becoming hard. If subjected to heat from a stove or radiator, or to the light of an arc light or sun light, or worse than all, if placed in a show case with light *in side,* the process of destruction goes on more rapidly, and the retailer finding the bottle hard makes a claim upon the jobber or factory on account of damaged goods, and feels that he has just grounds for complaint if exchange is not made. You say, " I must display goods to sell them. What am I to do about such articles?" Under ideal conditions they should be kept in closed boxes, and they are displayed at your own risk. However, if you have a half dozen bottles of the same kind, open the top box and when a sale is made deliver that to the customer.

Now, continuing the use of the water bottle as a general illustration, let us consider the troubles the retailer has with his customers, remembering that most bottles are made from " compounds " and were not intended to stretch, neither is there any grain or fibre, the material will tear in any direction with practically no effort, but only after a break is made, so the bindings and neck reinforcements are intended to prevent a break being started. You cannot repair a torn or damaged bag, as you have neither the materials nor tools; moreover, the new work must be vulcanized and that process would complete the destruction of the old portion of the bottle. A bottle may be brought to you distended greatly, so that its capacity has been greatly increased; it is also darkened in color, and you are told that it leaks. Of course it does, it having been filled with boiling water. It will stand such treatment a comparatively short time. If grease, oil, or glycerin has come in contact with the rubber, you will find the stock disintegrating. If the seams

are open and the bottle does show the effects of boiling water, ask if it has been in use continuously for several days. Constant heat finally softens the cement and the seams open. In such cases two bottles are required, giving each time to cool and dry. Often claims are made when bottles are really worn out. In all these cases you must summon up courage and tact to explain the situation to the customer. The customer will think " He must have known that it was a poor bottle or he would not have adjusted the claim so promptly." The issue should be fairly met, and, I believe, can usually be settled without loss of trade.

Atomizers.—Most of the trouble with these goods comes from inexperienced people trying to fix them. In my opinion, glass makes the ideal tube, but is fragile. Hard rubber comes next, and appears to stand all solutions used as sprays. Metal tubes I am opposed to, as many solutions act on them. The construction of an atomizer bulb is important. If the stock is too heavy, it is too much of an effort to compress the bulb; if too light, the bulb collapses. A quick-acting bulb is required to produce a continuous spray, and the end valve must be calculated to admit air with sufficient rapidity to fill the bulb as it expands. A new atomizer, filled and used daily, can be kept going indefinitely, but if allowed to stand for a week at a time the solution may clog it. To free it first try hot water, either by putting the entire top in it for a time or by spraying it through the tube, and, as a final resort, the wire should be pushed into the end of the tube that goes into the bottle to avoid injury to the spray point.

I notice that physicians with large practices use atomizers with long tubes and ordinary straight tips. I am of the opinion that extra tips and special shaped tubes, as far as the general public is concerned, are chiefly useful to talk about and sell.

Rubber Gloves.—These are elastic and seamless, and may be roughly divided into two kinds, for the use of surgeons and to be used in the household. Surgeons' gloves are rather satisfactory articles for a druggist to sell; each pair is usually packed in a heavy box with deep telescope lid, and when kept boxed will remain in good condition a long time. They are made from pure gum stock and are usually used but once. They stand the single process of sterilization, and there are seldom any claims for tears or imperfections. With household gloves it is another story. They are made of a " compound." The consumer buys a size too small and

the gloves split between the thumb and forefinger. Or, if the hands are moist, forgetting to dust the hands with talcum, the consumer pulls the glove by the wrist until it tears, or removes the glove by pulling instead of turning it inside out and then wonders why the finger tips pull off. Plunged into soapy water and not well rinsed, the stock disintegrates. Touching the blade of a knife, especially under water, cuts it instantly. Anyhow, back comes the consumer for another pair. I often wonder how much it is going to cost before the public is educated.

Ice Bags.—The screw-cap ice bag is the kind in general use to-day, as there is less leakage. Of all druggists' rubber goods, ice bags are subject to the roughest usage, and most frequently returned for exchange, chiefly the result of endeavoring to make them thin, as heavy material impairs their efficiency. There is no difficulty in supplying a screw-capped ice bag to retail at 75 cents to $1, as there are plenty of all-rubber, cloth-inserted or double-coated goods of these values, but the chief difficulty is in trying to find a satisfactory article to sell at 50 cents. Most of the goods of this latter style are made of thin plaid cloth with rubber on the inside only. They must be used with great care. Tell your customers not to attempt to break ice in the bag; also, to avoid sharp cornered pieces that may cut it. A little water poured into the bag will greatly aid in preventing the ice from cutting it.

Nipples.—There are probably fifty styles selling in this market, but many of them are sold so slowly that the stock ages in the hands of the dealers, especially when carried in bulk in a drawer or basket, and thus exposed to the air. It has often impressed me that unless the retailer buys with care and gives special attention to these goods that the losses will equal a considerable portion of his profits. These goods belong to both the " dipped " and " compound " classes, and show very different results under the same treatment. Their lasting qualities depend entirely upon the care which they receive, as, if not perfectly cleaned, the milk will soon destroy them. They cannot be thoroughly cleaned in cold water, and boiling water destroys the rubber.

Rubber Tubing.—One of the most difficult problems that a jobber has to meet is filling orders for rubber tubing. For years I have instructed our salesmen to obtain a small sample of the goods required or to ask exact measurements, and especially to find out the use for which it is intended. Tubing is generally made in

lengths of 50 feet, and when cut is not returnable. In placing an order for tubing the following information may be required: intended use, color, inside diameter, thickness of wall, outside finish. This last may be plain, corrugated, or covered with muslin (the latter is known as hand made). A small sample and knowledge of intended use will often save a page of explanation, also whether "compound" goods or pure gum is desired. For example, on atomizers the short piece that joins the bulb to the top is made of moderate diameter and a very heavy wall. For fountain syringes, a rather light wall is used to secure greater flexibility and partly to keep down the cost, as tubing is sold by the pound. Then there are a number of special classes for which compound goods are useless, among them being surgical drainage tubing, which comes in some twenty-five sizes, and is made either of pure gum or a specially fine maroon compound, and can be obtained either plain or perforated. *Gas tubing,* made on a wire coil, covered with fabric and rubber and an outer wearing fabric. This is sold in standard lengths, each end fitted with a heavy soft rubber coupler that makes a gas tight joint. Without going further into this question I trust you will realize the trials of the seller of tubing and by keeping them in mind save yourself time, irritation, and loss.

Fountain Syringes, made of "compound," cloth inserted or dipped stock, are identical in material and construction with water bottles of similar stocks, and there is no reason for the many styles made, except to furnish a range of prices and variety in appearance.

Hard Rubber is on account of its special properties in great demand in many trades. In the "druggists' sundries" business it is chiefly used for combs, atomizer tubes, syringe pipes, and some fittings. Its chief defect consists in its brittleness, but it possesses many advantages. It is easily worked before vulcanizing, and a smooth surface and high polish can be given it at comparatively small cost.

Just here let me call your attention to one of the annoyances of the retail dealer. There are a number of factories making hard rubber syringe pipes, some with screw threads from several lines of moulds. Now, there is apparently no standard for these screw threads, and pipes from different factories are frequently not interchangeable. A pipe may be screwed up with ease about half the proper distance, and then the next turn destroys the thread. Many manufacturers of soft rubber goods buy their hard rubber pipes

from various sources, so it is advisable to see that the stock does not become mixed, especially when show cases are cleaned. I do not wish you to think that the rubber line is simply a source of trouble. I have not found it so, but I understood that I was expected to tell you what you have to contend with in buying and selling such goods. In ordinary course of business they are bought, displayed, and sold with little or no trouble. Between the beginning of November and the end of January of this year I have sent out thirty gross of one number of water bottles. Up to the present time less than thirty pieces have been returned. Several of these show signs of boiling. I suggest to the retailer the plan of buying an assorted stock of goods made by several factories, and always with the name of the manufacturer on the goods or box. I think this is better merchandizing than purchasing all goods from one factory or goods from several, but concealed under the label of a jobbing house.

Don't overstock. It may be profitable to buy some goods in quantities sometimes, but in these days the difference in cost between the best price you could obtain and that which you would ordinarily pay is not over 10 per cent., and unless the entire lot is sold promptly, or if 10 per cent. of the stock is left to spoil by age, you are worse off than if you had paid the long price for your actual requirements.

You must, therefore, accept goods as they are shown you, select by appearance numbers best adapted to your trade, take care of your stock, for in that lies the profit. Charge enough to cover the occasional unavoidable loss, and then you will find this department of your business will pay a "reasonable" profit.

C. B. Lowe.

PHILADELPHIA COLLEGE OF PHARMACY.

MINUTES OF THE SEMI-ANNUAL MEETING.

The Semi-Annual Meeting of the Philadelphia College of Pharmacy was held September 30th, 1912, at 4 P.M. in the Library. The President, Howard B. French, occupied the Chair. In the absence of the Secretary, Professor F. P. Stroup acted as Secretary. Twenty members were present. The minutes of the quarterly meeting held June 24th, were read and approved. The minutes of the Board of Trustees for June 4th and 11th were read by the Registrar, J. S. Beetem, and approved.

The report of the Committee on Nominations was read and filed. In the absence of the Chairman, Professor Joseph P. Remington, Mr. Joseph W. England made a verbal report of the meeting of the American Pharmaceutical Association held at Denver. The Chair announced the death on September 20th, 1912, of Dr. Henry Mueller, a life member of the College, and a brief biographical sketch of him was also read.

Professor Henry Kraemer presented the Professor John M. Maisch's copies of the data sent to members of the U. S. P. Revision Committee, 1880 to 1890, by Chairman Charles Rice. He also presented a lot of pamphlets once the property of Professor Maisch. On motion, the thanks of the College was tendered to Professor Kraemer, and the pharmacopœial matter was referred to the Library Committee for proper binding.

Election of three trustees: Messrs. England and Watson were appointed tellers. Mr. Otto Kraus withdrew his name as a candidate. A ballot was taken, and the tellers reported the re-election of Aubrey H. Weightman, William E. Lee, and O. W. Osterlund as trustees for the ensuing three years.

The President appointed the Committee on Membership for the ensuing year.

The names of three candidates were proposed for Associate Membership. Under the rules these were referred to the Committees on Membership to be reported on at the next meeting of the College.

Professor Kraemer suggested the appointment of delegates to the annual meeting of the Delaware Pharmaceutical Association. The Chair appointed Professor C. B. Lowe, A. W. Miller, M.D., and H. J. Watson.

Mr. J. S. Beetem suggested sending congratulations to Mr. Frederick Gutekunst, a graduate of the College, the occasion being the 81st anniversary of his birth and the 50th of his career as a photographer. Professor Kraemer suggested sending notice of action to newspapers. The Chair appointed Professor C. B. Lowe, Professor Henry Kraemer and Professor S. P. Sadtler a Committee to frame a suitable letter. The Committee subsequently presented the following:

At the semi-annual meeting of the Philadelphia College of Pharmacy, held Monday, September 30th, the following resolution was adopted:

The College extends its hearty congratulations to its eminent Alumnus, Mr. Frederick Gutekunst, class of 1853, upon the attainment of 81 years of a most useful life and upon his great success in the profession of photography. His name is now recognized as one of the most eminent in this branch of applied science, and is known both in our own land and to visitors from foreign countries.

C. A. WEIDEMANN, M.D., *Recording Secretary.*

ABSTRACTS FROM THE MINUTES OF THE BOARD OF TRUSTEES.

June 4th, 1912.—Owing to the absence from the city of a number of the members of the Board of Trustees, the meeting was adjourned until June 11th.

June 11th, 1912.—Fourteen members were present. Minutes of the meetings held May 7th and May 14th were read, corrected and approved.

Committee on Instruction reported the resignation of Mr. John J. Bridgeman, Assistant in Pharmacognosy, to take effect June 1st, 1912, and the appointment of Mr. Philip F. Fackenthall, as Temporary Assistant. Mr. Armin K. Lobeck was re-elected Assistant in Botany for 1 year from June 1st, 1912.

Committee on Commencement recommended that the usual resolutions of thanks be conveyed to those taking part in the Commencement exercises, and that a vote of thanks be conveyed to the Philadelphia Electric Company for the use of fans on that occasion. It was so ordered. They also recommended that the Treasurer be authorized to lease the Academy of Music for Thursday evening, May 22d, 1913; it was so ordered.

Committee on Scholarships presented a very complete report, consideration of which was postponed until September meeting, with the exception of the recommendation referring to the Keasbey & Mattison Scholarship and the Thomas H. Powers Scholarship, which on motion, were continued in force as heretofore, of which action the donors were to be so advised.

Committee on Membership reported favorably on the application of William A. Carpenter for active membership, a ballot was taken and the applicant was unanimously elected.

On motion, it was ordered that the Treasurer be authorized to pay salaries and approve bills during the summer recess of the Board.

September 3d.—Ten members were present. The Minutes of the meeting held June 11th were read and approved.

Special Committee to formulate New Rules submitted a number of suggestions relative to this subject, and after a modification of some of the wording used in the report presented, it was adopted —but referred back to the Committee to make the necessary changes.

Committee on Library reported that very little work had been done during the summer. There were no purchases but a number of donations had been received.

Committee on Examinations reported that Mr. LeRoy Forman and Mr. Glenn E. Jeliff had passed their examination for the Certificate of Proficiency in Chemistry and that Mr. George Rodney Foss and Mr. Richard I. Grantham had passed their examination in the Pure Foods and Drug Course and were entitled to Certificates. On motion, it was ordered that the Certificates be granted.

ICHTHYOL TESTS.

Ichthyol Tests.—In the "*Chemist and Druggist*," Dec. 18, 1909, Dr. F. W. Passmore, writing in regard to organic sulphur preparations of the ichthyol type, stated that the combined sulphur is the most important constituent in these preparations, and he gave analytical figures which show that ichthyol is distinguished from its substitutes by containing 12.5 per cent. of "sulphidic" sulphur in the organic dry residue, and 6.1 per cent. of sulphonic sulphur, while the composition as a whole is remarkably constant. His conclusions have been confirmed generally by Dr. Aufrecht ("*Allgem. Mediz. Central-Zeit.*," 1912, 69), who gives analyses of ichthyol and ichthynat, showing that these substances in the natural state contain 10.6 and 7.3 per cent. of sulphur respectively, and when dried the following results were obtained (less dry ammonium sulphate in the residue):

	Ichthynat. Per cent.	Ichthyol Per cent.
Sulphur total	12.29	19.59
Sulphonic	6.59	5.60
Sulphidic	5.70	13.99
Ammonia	3.50	2.98
Ethereal extract	14.55	31.08
Substances insoluble in alcohol	12.99	44.15